

WHAT IS CLAIMED IS:

1. A semiconductor device, comprising:
  - a first copper layer;
  - an insulating layer formed on said first copper layer and having a  
via reaching said first copper layer;
  - 5 a second copper layer electrically connected to said first copper layer  
through said via; and
  - a barrier layer located between said second copper layer and said  
insulating layer, and between said first copper layer and said second copper  
layer, said barrier layer having a structure with a tantalum nitride layer  
10 sandwiched by layers having a better adhesive property to copper than said  
tantalum nitride layer.
2. The semiconductor device according to claim 1, wherein said  
barrier layer has a multi-layer structure with said tantalum nitride layer  
sandwiched by tantalum layers.
3. A semiconductor device, comprising:
  - a first copper layer;
  - an insulating layer formed on said first copper layer and having a  
via reaching said first copper layer; and
  - 5 a second copper layer electrically connected to said first copper layer  
through said via, at least either one of said first and second copper layers  
containing an inert element.
4. The semiconductor device according to claim 3, wherein said  
inert element is argon.
5. A semiconductor device, comprising:
  - a first copper layer;
  - an insulating layer formed on said first copper layer and having a  
via reaching said first copper layer; and

- 5 a second copper layer electrically connected to said first copper layer through said via, at least either one of said first and second copper layers containing an element in group 8 of a periodic table.